



Revision Number:

Purchasing Agent: David Gill  
(801) 538-3254

Item: 7" AND 9" LED PEDESTRIAN &amp; COUNTDOWN SIGNAL MODULES

Vendor: 91807A GADES SALES CO., INC. (ordering address)  
7100 N. BROADWAY, SUITE 5T  
DENVER CO 80221Internet Homepage: [www.gadestraffic.com](http://www.gadestraffic.com)

Telephone: (303) 883-6123

Fax number: (303) 989-5526

Contact: John Coleman

Email address: [jjcdenver@aol.com](mailto:jjcdenver@aol.com)

Brand/trade name: Gelcore

Price: See Attached Price List

Terms: Net 30 Days

Effective dates: 12/15/04 through 12/14/06

Days required for delivery: 28 – 42 Days

Price guarantee period: 2 Years

Minimum order: 100 Pcs

Min shipment without charges: Included in Pricing

Other conditions: three (3) one year renewal options

This is a new Contract.
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Remittance Address: Gades Sales Co., Inc.  
PO Box 9003  
Wichita KS 67277

This contract covers only those items listed in the price schedule. It is the responsibility of the agency to ensure that other items purchased are invoiced separately. State agencies will place orders directly with the vendor (creating a PG in Finet) and make payments for the same on a PV referencing the original PG. Agencies will return to the vendor any invoice which reflects incorrect pricing.

**PRICING****LED PEDESTRIAN AND COUNTDOWN SIGNAL MODULE**

1. LED Pedestrian Signal Module with Countdown Timer with 7" Numbers  
\$199.85
2. LED Pedestrian Signal Module with Countdown Timer with 9" Numbers  
\$199.85

**FREIGHT CHARGES**

1. For quantities less than 100, actual freight will be billed as a separate line item and the freight invoice attached to Gades invoice.
2. For quantities less than 100 pieces, contact John Coleman at (303) 883-6123 for accurate freight charges. If the freight charges are over \$200, call Dan Reisner in State Purchasing at (801) 538-3216 for freight comparison

**SPECIFICATIONS  
FOR  
LED PEDESTRIAN AND COUNTDOWN SIGNALMODULE**

**GENERAL DESCRIPTION** To provide the State with Led Pedestrian and Countdown Signal Modules The module is designed to fit in a standard one section 16-inch x 18-inch pedestrian traffic signal housing built to the following specification, definitions, practices and minimum standard requirements described in "Vehicle Traffic Control Signal Heads" (VTCSH), Pedestrian Traffic Control Signal Indications" (PTCSI) and "Manual of Uniform Traffic Control Devices" (MUTCD).

**1.0 PRODUCTS****A. General**

1. Pedestrian and countdown LED traffic signal modules shall be designed as a retrofit replacement for the message bearing surface of a nominal 16 inch x 18 inch one section pedestrian and countdown traffic signal housing built to the PTCSI Standard.
2. Pedestrian and countdown LED traffic signal module display and functionality shall meet minimum standard requirements per MUTCD.

**B. Display**

- 1 The message-bearing surface of the module shall be supplied with an overlapping, full "Upraised Hand" and full "Walking Person" pedestrian signal indication that comply with PTCSI and MUTCD standard for these symbols for a message-bearing surface of the size specified.



2. The numbers 00 to 99 on the countdown display shall have minimum two aligned (non-staggered) rows of LEDs with at least 14 segments. The countdown display shall consist of Portland orange numbers that are at least 7 inches in height on a black opaque background.
3. The countdown display shall be located immediately adjacent to the associated "Upraised Hand" pedestrian signal indication.
4. The "Upraised Hand" and "Walking Person" pedestrian signal indication shall be at least 7 inches high.
5. The individual LED light sources for the "Upraised Hand" and "Walking Person" pedestrian signal indication shall be independently interconnected so that a catastrophic failure of a single LED will result in a total loss of not more than one LED.
6. The individual LED light sources for the countdown number indication shall be wired so that a catastrophic failure of one LED light source shall not result in the loss of illumination of more than one display LED segment.

Each pedestrian signal head indication shall be independently illuminated and emit a single color.

#### **C. Retro fit Requirements**

- a. LED pedestrian and countdown signal modules shall be designed as retrofit replacements for the existing pedestrian signals.
- b. LED pedestrian and countdown signal modules shall not require special tools for installation.
- c. LED pedestrian and countdown signal modules shall fit into the existing pedestrian signal housings built for the PTCSI size stated in Section 1.0 without any modification to the housing.
- d. LED pedestrian and countdown signal module shall be weather tight, fit securely in the housing and shall connect directly to existing electrical wiring by means of push on type connectors. The module shall have an insulating covering for all electrical connections and electronic components.
- e. Installation of a replacement LED module into the existing pedestrian housing shall only require the removal of the existing optical unit components, i.e., lens, lamp and gaskets.
- f. The module lens may be a replaceable part without the need to replace the complete module.
- g. The retrofit module shall be capable of replacing the optical unit.

#### **D. Signal Lens**

1. The lens of the LED pedestrian and countdown signal modules shall be polycarbonate UV stabilized and a minimum of 1/4" thick.
2. The exterior of the lens of the LED pedestrian and countdown signal module shall be smooth and frosted to prevent sun phantom.



## **2.0 CONSTRUCTION**

- A. The LED pedestrian and countdown signal module shall be a single, self-contained device, not requiring on-site assembly for installation into the existing traffic signal housing and include an installed gasket. The power supply shall be designed to fit and mount inside the pedestrian signal module.
- B. All Portland Orange LEDs shall be "AlInGaP" technology or equal, and rated for 100,000 hours or more at 25°C and 20 mA. White LEDs must be InGaN technology.
- C. All internal LED and electronic components shall be adequately supported to withstand mechanical shock and vibration from high winds and other sources.

## **3.0 MATERIALS**

- A. Enclosures containing the power supply and electronic components of the LED module shall be made of UL94VO flame-retardant materials. The lens is excluded from this requirement.
- B. The following operating characteristics shall be identified: rated voltage, power consumption, and volt-ampere.
- C. Materials used for the lens and module construction shall conform to ASTM specifications where applicable.

## **4.0 MODULE IDENTIFICATION**

- A. Each individual LED pedestrian and countdown signal module shall be identified on the backside with the following:
  - 1. Manufacturer's trademark or name
  - 2. Serial number
  - 3. Model number
  - 4. Voltage rating
  - 5. Power consumption (Watts and Volt-Ampere)
  - 6. Date of manufacturer (minimum information required – month and year)
  - 7. An indication to orient the installer to the Top of the Unit (such as an Arrow symbol or the word TOP)

## **5.0 ENVIRONMENTAL REQUIREMENTS**

- A. The LED pedestrian and countdown signal modules shall be rated for use in the ambient operating temperature range, measured at the exposed rear of the module, of -40°C to +74°C (-40°F to +165°F).
- B. The pedestrian module shall be designed to meet NEMA 250 Hose down Test. The test is to be conducted on a stand-alone unit. No protective housing shall be used.

## **6.0 PHOTOMETRIC REQUIREMENTS**

- A. For a minimum period of 60 months, maintained minimum luminance values for the "Walking Person" and "Upraised Hand" pedestrian signal indication under the operating conditions defined in Section 5a and Section 8b shall not be less than 5300 cd/m<sup>2</sup> and 3750 cd/m<sup>2</sup> respectively when measured perpendicular to the surface of the module at nine separate points on the indication. These values may decrease up to 50% of these table values beyond 15 degree from the perpendicular in either to the left or right on a horizontal plane.



- B. The uniformity of the "Walking Person" and the "Upraised Hand" pedestrian signal indication illumination shall meet a ratio of not more than 1 or 5 between the minimum and maximum luminance measurements (in CD/m<sup>2</sup>) per PTCSI.
- C. When operating within the temperature range specified in Section 5a., the average luminance of the module shall not exceed twice the minimum luminance.
- D. The module shall be designed so that when operated over the specified ambient temperature and voltage ranges during the warranty period of the unit, the numeric display shall attract the attention of, and be readable to, a viewer (both day and night) at all distances from 3 meters to the full width of the area to be crossed.

## **7.0 CHROMATICITY**

- A. The measure chromaticity coordinates of the LED signal modules shall conform to the chromaticity requirements per PTCSI standard as follows:
  - 1. "Upraised Hand" symbol and countdown number indication shall be Portland Orange. Refer to PTCSI for the measured chromaticity coordinate values.
  - 2. "Walking Person" symbol indication shall be White. Refer to PTCSI for the measured chromaticity coordinate values.

## **8.0 ELECTRICAL**

- A. All wiring and terminal blocks shall meet the requirements of Section 13.02 of the VTCSH Standard. Three secured, color coded, 914 mm (36 in) long, 600V, 16 AWG minimum, jacketed wires, conforming to the National Electrical Code, rated for service at +105°C, are to be provided for electrical connection.
- B. The LED pedestrian and countdown signal module shall operate from a 60  $\pm$  3 Hz AC line over a voltage range of 80 VAC RMS to 135 VAC RMS. The current draw shall be sufficient to ensure compatibility and proper triggering and operation of load current switches and conflict monitors.
- C. Nominal operating voltage for all measurements shall be 120  $\pm$  3 VAC RMS.
- D. Fluctuations in line voltage over the range of 80VAC RMS to 135VAC RMS shall not affect luminous intensity by more than  $\pm$  10 percent.
- E. The LED circuitry shall prevent flicker at less than 100 Hz over the voltage range specified in above section 8b.
- F. Low Voltage Turn Off: There should be no illumination of the module when the applied voltage is less than 35 VAC RMS. To test for this condition the each icon must first be fully illuminated at the nominal operating voltage. The applied voltage shall then be reduced to the point where there is no illumination. This point must be greater than 35 VAC RMS AC.
- G. Turn-On and Turn-Off Time:  
The each pedestrian signal indication of the module shall reach 90% of their full illumination (turn-on) within 100 msec. of the application of the nominal operating voltage. The modules shall not be illuminated (turn-off) after 100 msec. of the removal of the nominal operating voltage. For abnormal conditions when nominal voltage is applied to the unit across the two-phase wires (rather than being applied to the phase wire and the neutral wire) the pedestrian signal unit shall default to the hand symbol.



- H. The module's on-board circuitry shall include voltage surge protection to withstand high-repetition noise transients and low-repetition high-energy transients as stated in Section 2.1.6, NEMA Standard TS-2, 1998, or the latest version.
- I. The LED pedestrian and countdown module shall be operationally compatible with the currently used controller assemblies. The LED pedestrian and countdown module shall be operationally compatible with conflict monitors.
- J. The LED pedestrian and countdown module including its circuitry must meet Federal Communications Commission (FCC) Title 47, Subpart B, Section 15 regulations concerning the emission of noise.
- K. The LED pedestrian and countdown module shall provide a power factor of .90 or greater when operated at nominal operating voltage, and 25°C (77°F).
- L. Total harmonic distortion (current and voltage) induced into an AC power line by an LED pedestrian and countdown module shall not exceed 20% over the operating voltage range and temperature at 25°C (77°F).
- M. The maximum power consumption shall not exceed 14 Watts at rated voltage.

## **9.0 FUNCTIONS**

### **A. Basic operation**

- 1. The countdown module shall be compatible with all types of traffic controllers. The control and regulation module shall have the capability for the countdown displays to be automatically adjusted with the programmed intervals of the traffic controller.
- 2. The module shall operate in one mode: Clearance Cycle Countdown Mode. The module will start counting when the flashing clearance signal turns on and will countdown to "0" and turn off when the steady "Upraised Hand" indication is on.
- 3. At power on, the module enters a single automatic learning cycle. During the automatic learning cycle, the countdown display shall remain dark.
- 4. If the controller output displays steady "Upraised Hand" indication and the unit has not arrived to zero or if both the "Upraised Hand" and "Walking Person" are dark for some reason, the unit suspends any timing and the countdown number indication display will go dark.
- 5. The module shall allow for consecutive cycles without displaying the steady "Upraised Hand" indication.
- 6. The unit re-programs itself if it detects any increase or decrease of pedestrian timing. The counting unit will go blank once a change is detected and then take one complete pedestrian cycle (with no counter during this cycle) to adjust its buffer timer.

### **B. Countdown Functionality**

The countdown operating mode shall be such that it complies with the following MUTCD standard:

- 1. Countdown displays shall not be used during the walk interval or during the yellow change interval of a concurrent vehicular phase.



2. A steady "Upraised Hand" signal indication shall be displayed during the yellow change interval and any red clearance interval (prior to a conflicting green being displayed)
3. The countdown pedestrian signal shall display the number of seconds remaining until the termination of the pedestrian change interval.
4. The display of the number of remaining seconds shall begin only at the beginning of the pedestrian change interval. After the countdown displays zero, the display shall remain dark until the beginning of the next countdown.
5. The illuminated period of each flash shall be not less than half and not more than two-thirds of the total flash cycle.
6. The light source of a flashing "Upraised Hand" indication shall be flashed continuously at a rate of not less than 50 or more than 60 times per minute.

#### **C. Preemption**

The unit shall be designed to operate during and following a preemption cycle.

1. The module shall recognize preemption events and temporarily modify the crossing cycle accordingly.
2. If the controller preempts during the "Walking Person" indication interval, the countdown will follow the controller's directions and will adjust from "Walking Person" to flashing "Upraised Hand". It will start to count down during the flashing "Upraised Hand" and reach zero at the same time as the flashing "Upraised Hand" becomes solid.
3. If the controller preempts during the flashing "Upraised Hand", the countdown will continue to count down without interruption.
4. The next cycle, following the preemption event, shall use the correct, initially programmed values.

#### **D. Power failure**

The equipment must maintain a consistent countdown during short power failures (<1 second). A longer failure or an absence of signal superior to one (1) second must turn off display and trigger a restart system remembering the last sequence, as it is done for the NEMA traffic controller.

The countdown number indication will go dark for one pedestrian cycle after loss of power of more than 1.5 seconds.

### **10.0 QUALITY ASSURANCE**

Unless otherwise specified all of the test will be conducted at an ambient temperature of 25°C and at the nominal operating voltage of 120 VAC RMS.

- A. The modules shall be manufactured in accordance with a vendor quality assurance (QA) program. The QA program shall include two types of quality assurance: (1) design quality assurance and (2) production quality assurance. The production quality assurance shall include statistically controlled routine tests to ensure minimum performance levels of the modules built to meet this specification.
- B. QA process and test result documentation shall be kept on file for a minimum period of seven years.
- C. The module designs not satisfying design qualification testing and the production quality assurance testing performance requirements shall not be labeled, advertised, or sold as conforming to this specification.



- D. Design Qualification testing shall be performed on new module designs, and when a major design change has been implemented on an existing design.  
Unless otherwise specified, all of the tests shall be conducted on the same set of randomly selected modules, hereafter called the sample test, at an ambient temperature of 25°C and at the nominal operating voltage of 120 VAC RMS.
- E. Testing shall be performed once every 5 years or when the module design or LED technology has been changed. Test data shall be retained by the module manufacturers for a minimum period of 7 years and for a period of at least 5 years beyond the last date of manufacture of that model type.
- F. All new modules shall undergo the following Production Quality Assurance testing prior to shipment. Failure of any module to meet requirements of these QA tests shall be cause for rejection. QA test results shall be maintained for a period of 7 years.
- G. The production quality assurance shall include statistically controlled routine tests to ensure minimum performance levels of modules built to meet this specification.
- H. Prior to shipment, each module shall be energized (burn-in), for a minimum of 24 hours, at rated voltage, and at a 100 percent on-time duty cycle. This test shall be conducted in an ambient temperature of +60°C (+140°F). Any failure of the module occurring during the burn-in shall be caused for rejection.
- I. Each module shall be visually inspected for any exterior physical damage or assembly anomalies. Careful attention shall be paid to the surface of the lens to ensure there are no scratches (abrasions), cracks, chips, discoloration, or other defects.
- J. Each shipment from the manufacturer shall be furnished with a Certificate of Compliance. The certificate shall certify that the modules comply with the requirements of this specification. In addition to the certificate, the modules shall be supplied with a list of the serial numbers of the units, copies of all applicable test reports for the signal modules, and signature of the person responsible for certifying the tests.

## **11.0 WARRANTY**

- A. Manufacturers will provide the following warranty provisions.
1. Replacement or repair of the pedestrian LED signal module that fails to function as intended due to workmanship (material defects) or exhibit luminous intensities less than minimum values specified in Section 6.0 within the first 5 years (60 months) from the date of delivery.
  3. The module will be repaired or replaced by the manufacturer if the luminous intensity of the countdown number display decreases so that it does not attract the attention of, or is not readable to, a viewer (both day and night) at all distances from 3 meter to the full width of the area to be crossed when operated over the specified operating ambient temperature and voltage ranges. This warranty provision shall be in effect for the first 60 months from the date of delivery.

This contract resulted from bid GL5012.

### **FINET COMMODITY CODE(S): FOR AGENCY USE ONLY**

55088000000	-	TRAFFIC SIGNALS AND EQUIPMENT, ELECTRIC SYSTEMS
55089000000	-	TRAFFIC SIGNALS AND EQUIPMENT, ELECTRIC PARTS
55081000000	-	TRAFFIC CONTROLS AND EQUIPMENT, ELECTRIC PARTS
55082000000	-	TRAFFIC COUNTERS AND ACCESSORIES
55096000000	-	WARNING LIGHTS, FLASHERS, AND FLASHING ARROW BOARDS (SEE CLASS 285-76 FOR STREETLIGHTS AND STANDARDS)
96883000000	-	TRAFFIC SIGNAL MAINTENANCE AND REPAIR